



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: SaM146-1S18
 UNIQUE ID NUMBER: 01P11PJ004
 COMBUSTOR:
 ENGINE TYPE: MTF

BYPASS RATIO: 4.4
 PRESSURE RATIO (π_{00}): 22.8
 RATED THRUST (F_{00}) (kN): 72.7

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D _p /F ₀₀ (g/kN) or SN	2.4	72.0	44.6	14.7
AS % OF ORIGINAL LIMIT	12.4	61.0	52.1	57.1
AS % OF CAEP/2 LIMIT (NO _x)			65.1	
AS % OF CAEP/4 LIMIT (NO _x)			76.8	
AS % OF CAEP/6 LIMIT (NO _x)			82.6	
AS % OF CAEP/8 LIMIT (NO _x)			95.8	

For non-volatile particulate matter (nvPM) emissions, please refer to the ICAO Engine nvPM Emissions Data Sheet.

DATA STATUS

- PRE-REGULATION
 x CERTIFICATION
 - REVISED (SEE REMARKS)

TEST ENGINE STATUS

x NEWLY MANUFACTURED ENGINES
 x DEDICATED ENGINES TO PRODUCTION STANDARD
 - OTHER (SEE REMARKS)

EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE
 (ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)
 - OUT OF PRODUCTION (DATE: -)
 - OUT OF SERVICE (DATE: -)

MEASURED DATA

MODE	POWER SETTING (%F ₀₀)	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO _x	
TAKE-OFF	100	0.7	0.841	0.02	0.30	17.36	12.6
CLIMB OUT	85	2.2	0.691	0.04	0.30	14.52	12.1
APPROACH	30	4.0	0.238	0.06	4.67	7.28	0.1
IDLE	7	26.0	0.100	0.82	27.55	3.82	0.1
LTO TOTAL FUEL (kg) or EMISSIONS (g)			339	136	4591	2947	-
NUMBER OF ENGINES				2	2	2	2
NUMBER OF TESTS				5	5	5	5
AVERAGE D _p /F ₀₀ (g/kN) or AVERAGE SN (MAX)				1.9	63.2	40.6	12.6
SIGMA (D _p /F ₀₀ in g/kN, or SN)							
RANGE (D _p /F ₀₀ in g/kN, or SN)							

ACCESSORY LOADS

POWER EXTRACTION - (kW) AT - POWER SETTINGS
 STAGE BLEED - (% CORE FLOW) AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	100.4-101.3
TEMPERATURE (K)	289.2-302.5
ABS HUMIDITY (kg/kg)	0.00619-0.01331

FUEL

SPEC	Jet A-1
H/C	1.92
AROM (%)	16.7-17.5

MANUFACTURER: PowerJet S.A.
 TEST ORGANIZATION: PowerJet S.A.
 TEST LOCATION: Villaroche, France and Rybinsk, Russia
 TEST DATES: 01/07/2009-01/05/2011

NO_x REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
x	2.3.2 d) (CAEP/6)
	2.3.2 e) (CAEP/8)

REMARKS

1. Test engine 146-006/1A and test engine 146-101/3
2. Certification report CR-037 Rev.1 and CR-037 S1
3. Certification in accordance with Part III, Chapter 2, of Amendment 6 of ICAO Annex 16 Vol. II.
4. NO_x levels in accordance with Part III, Chapter 2, 2.3.2 d) (CAEP/6)

Compliance with Fuel Venting requirements: x ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)